

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

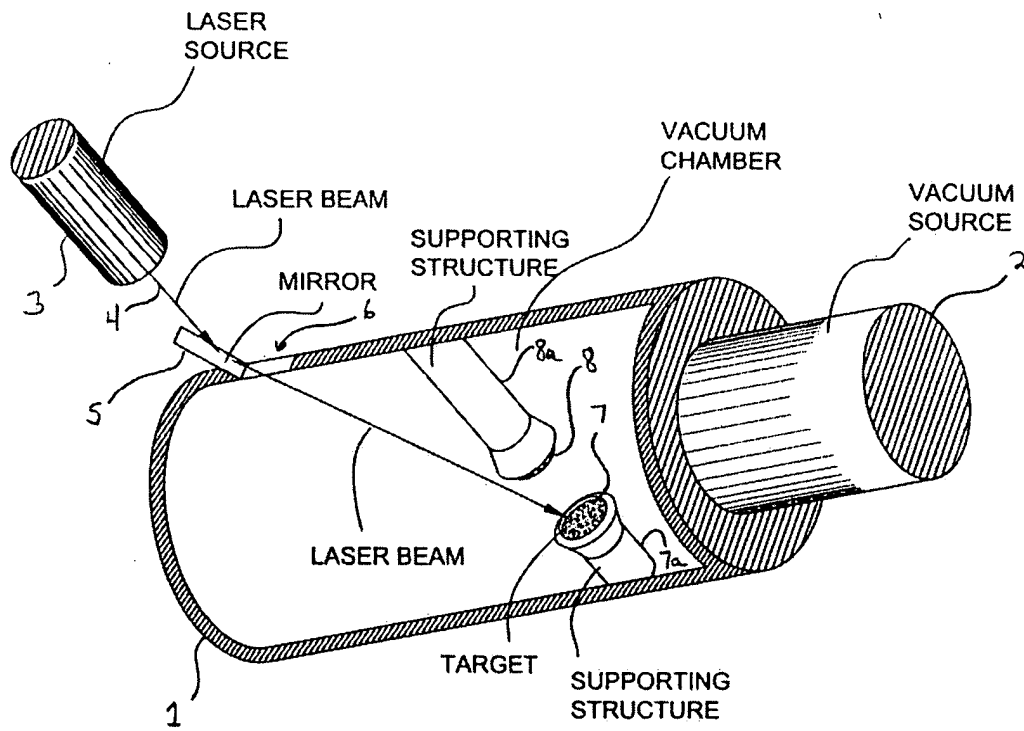


FIG. 1

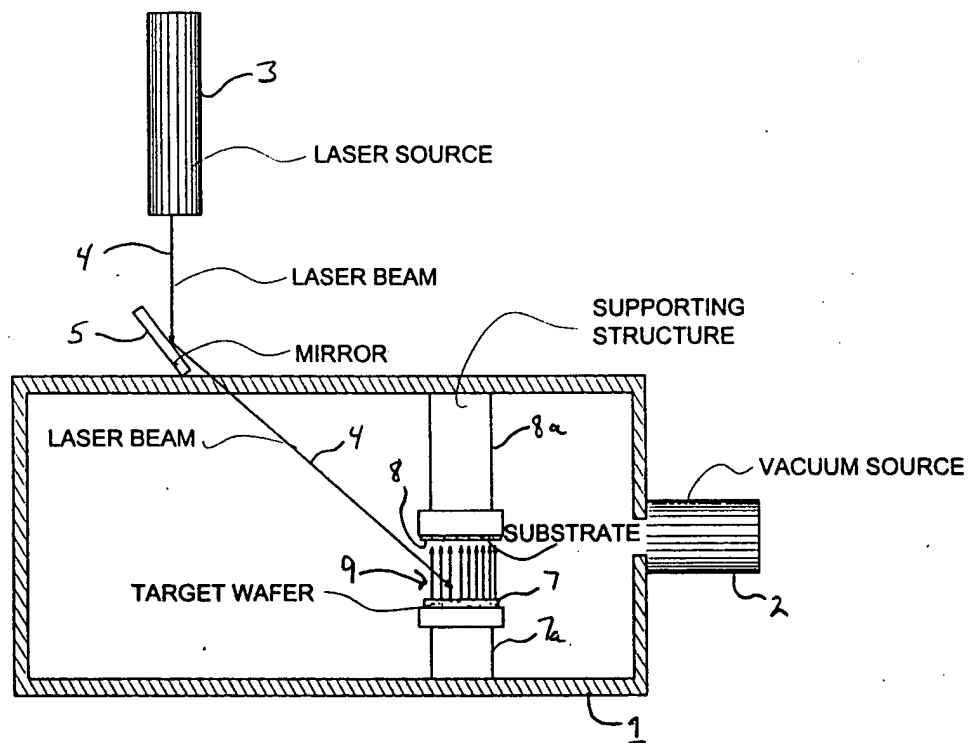


FIG. 2

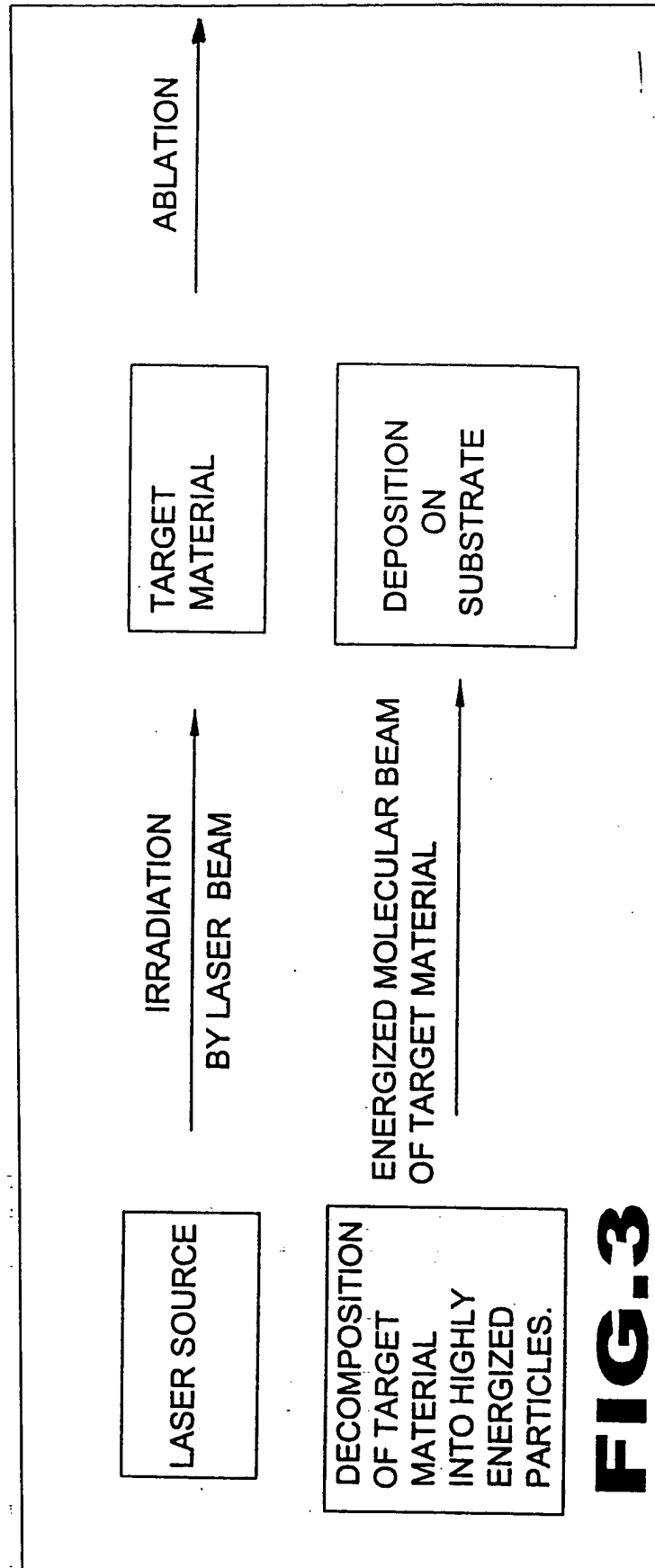
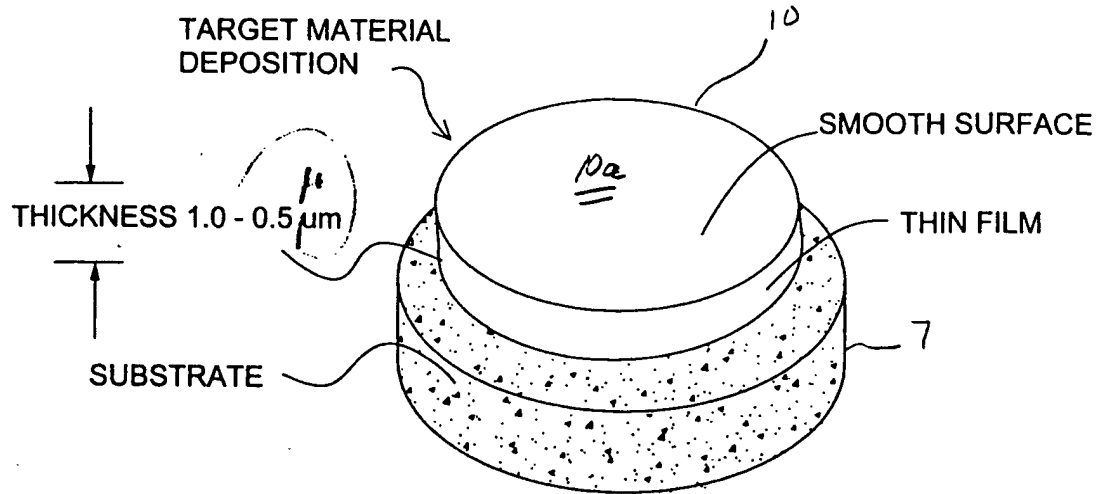


FIG.3



ISOMETRIC VIEW

FIG.4

5/30

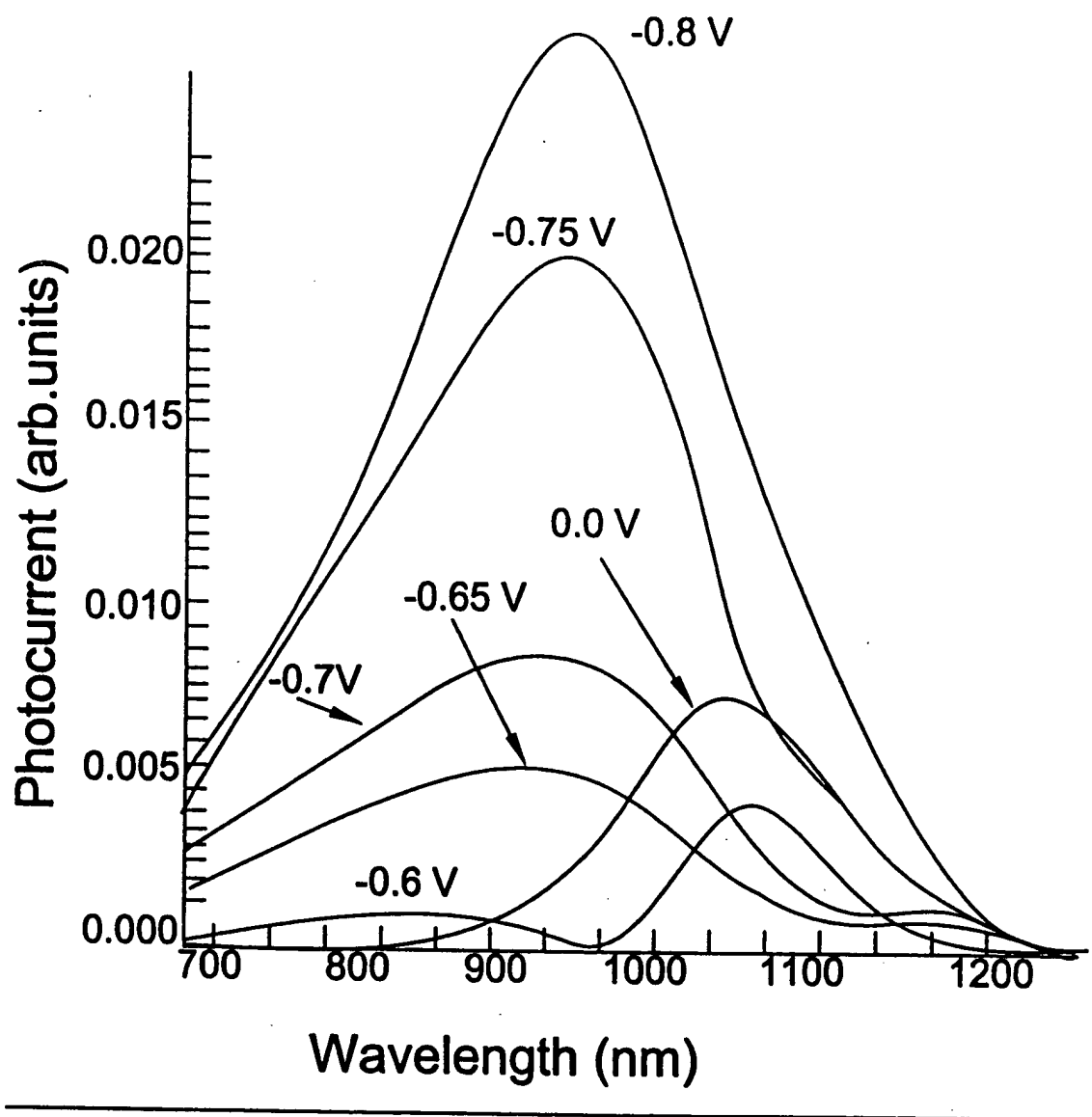


FIG 5A

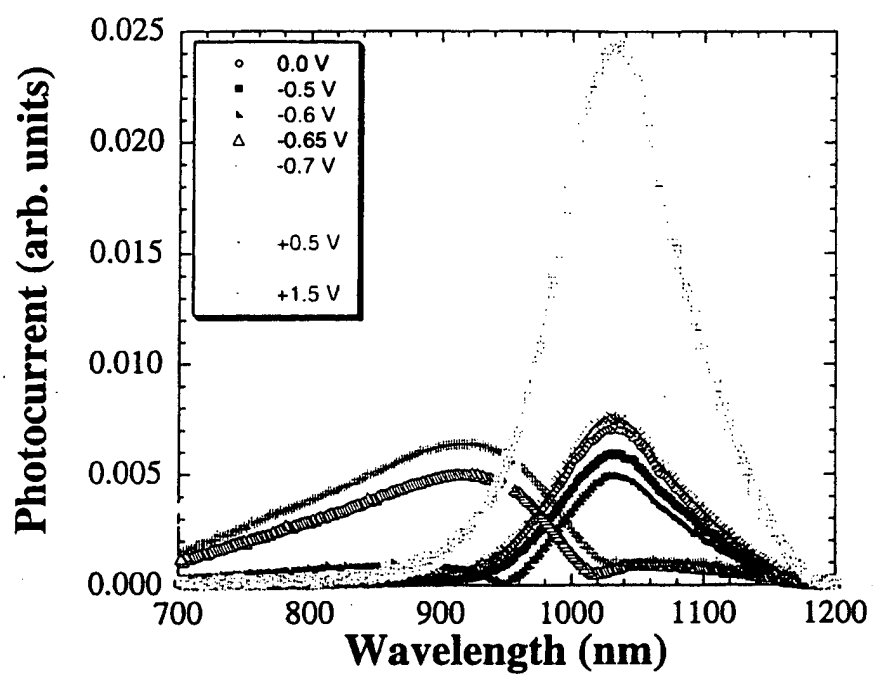


FIG. 5B

7/30

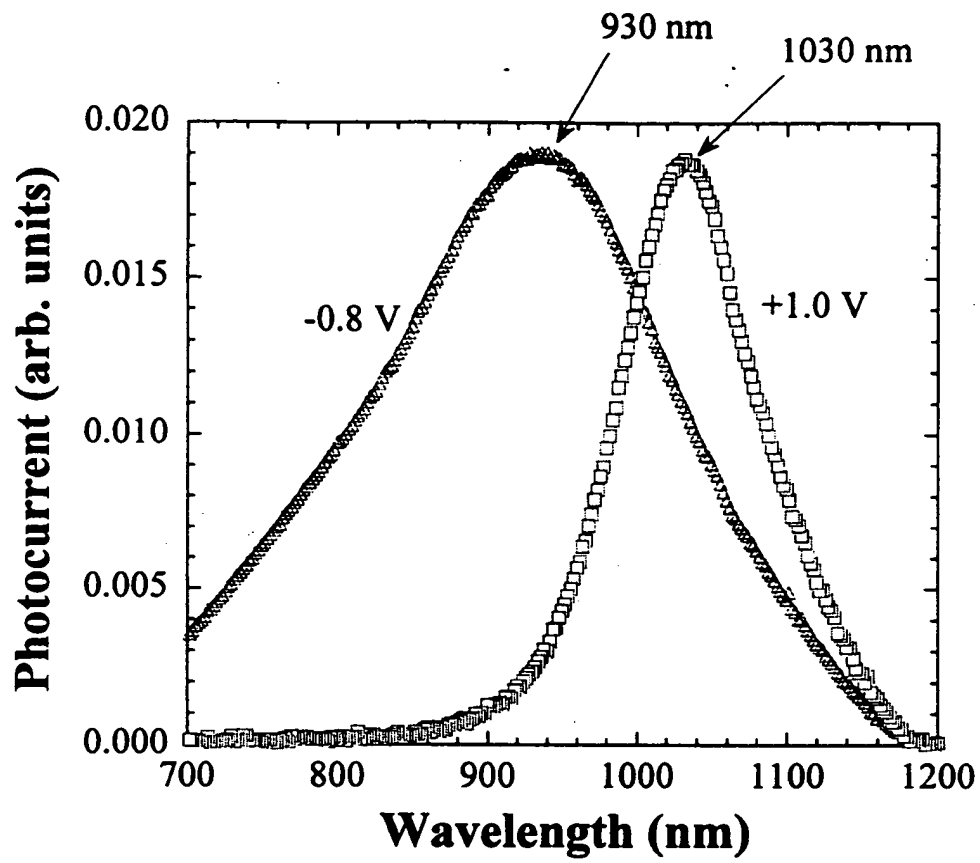


FIG. 5C

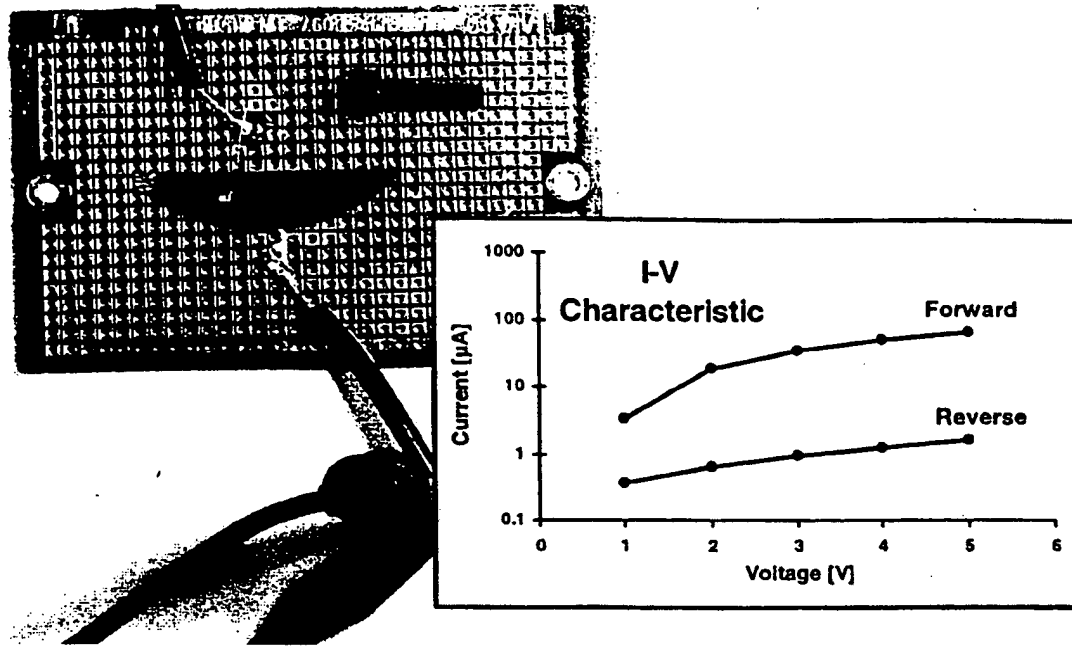


FIG. 6A & B

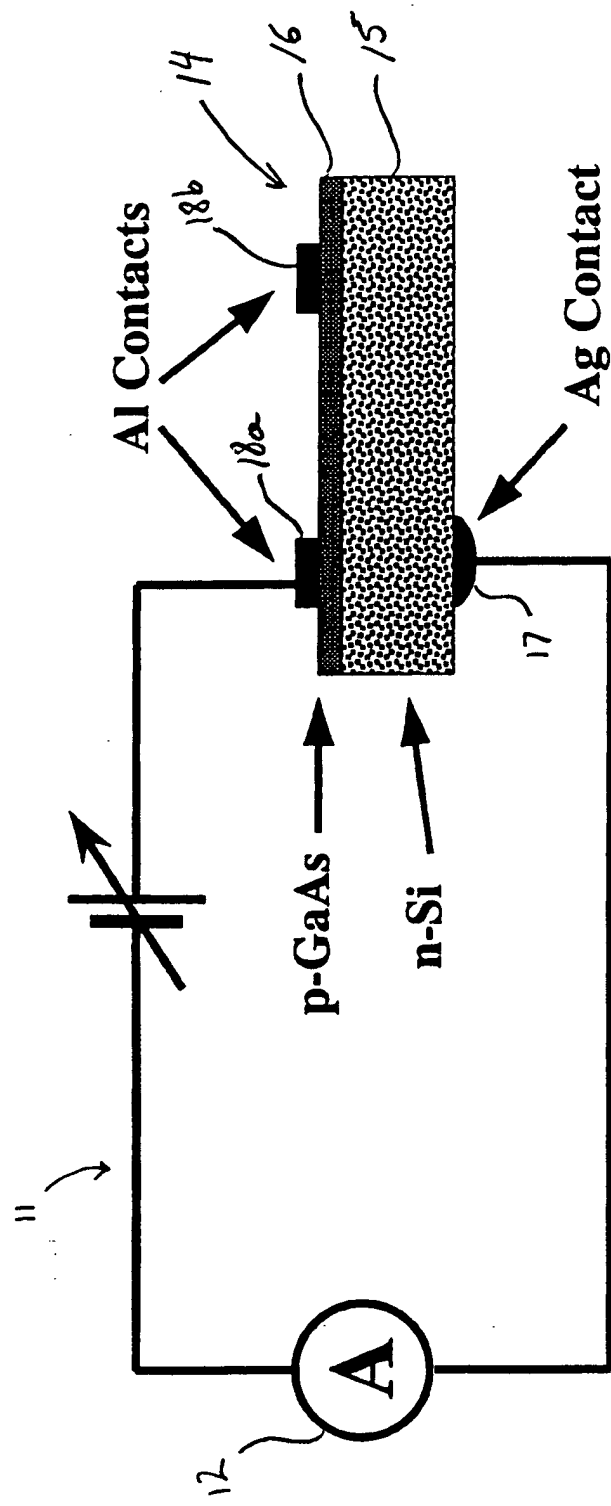


FIG. 7

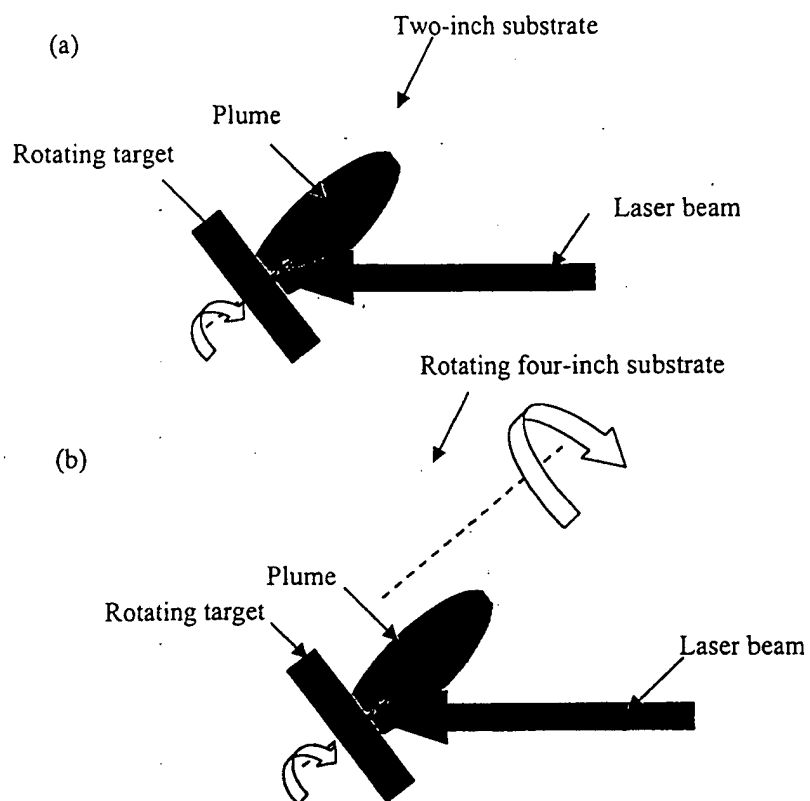


FIG. 8 A & B

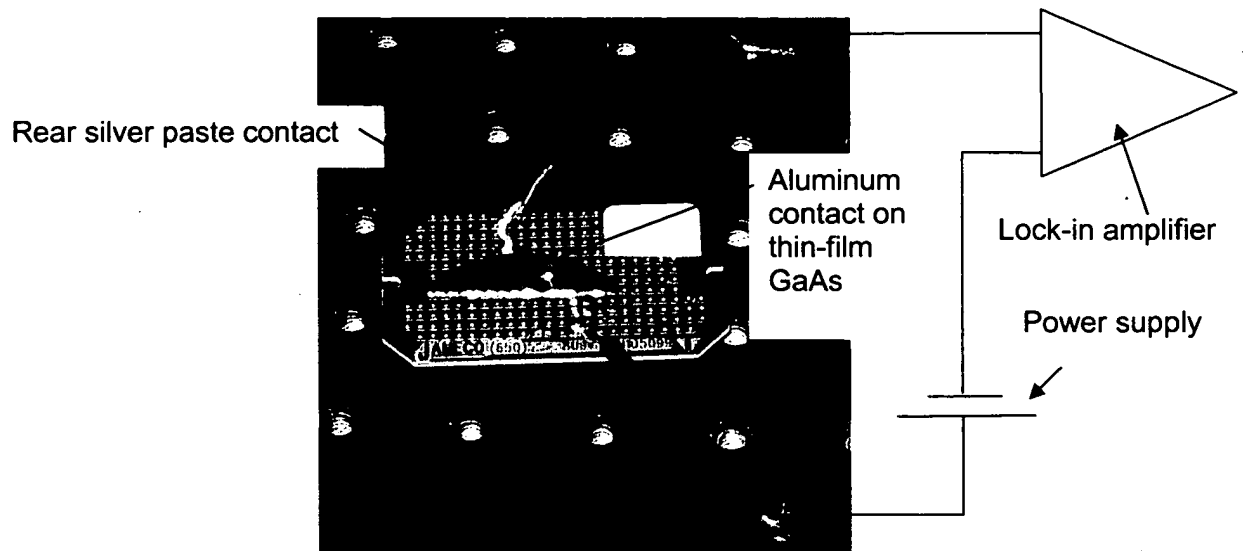


Figure 9: Image of the p-GaAs/n-Si sample including schematically the circuit used for the photocurrent measurements. For the optical excitation, the sample was illuminated between the Al contacts.

FIG. 9

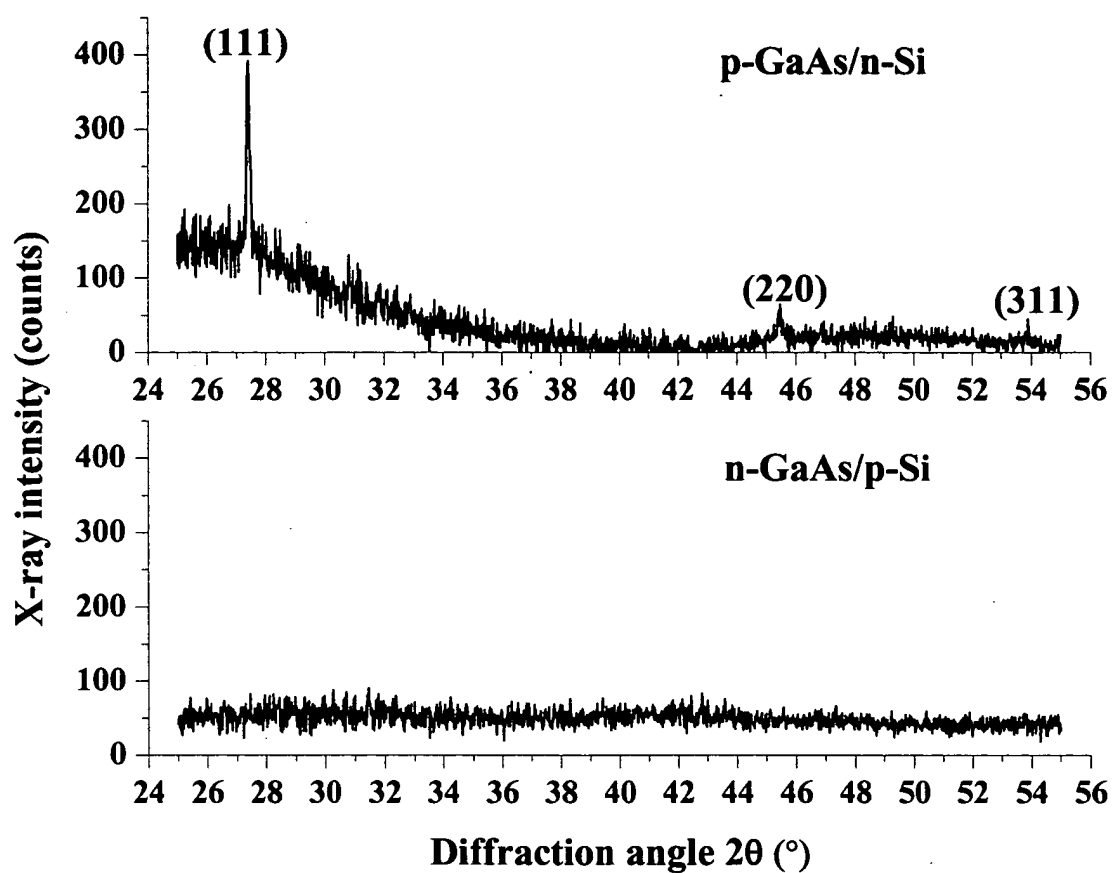


Figure 10: X-ray diffraction patterns for both samples. The background signal of the substrate has been subtracted.

FIG. 10

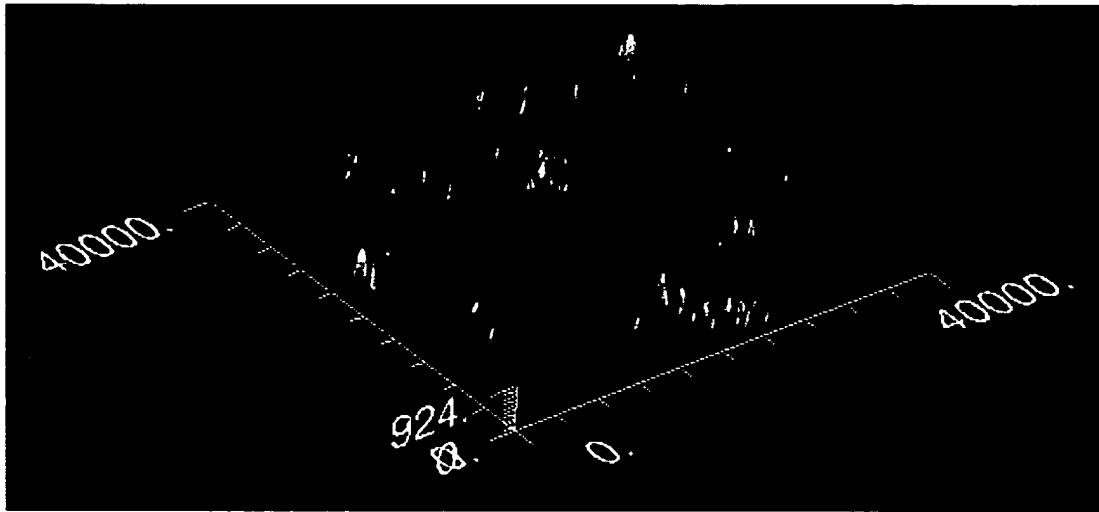


Figure 11: AFM image of the surfaces of the p-GaAs/n-Si sample (units in nm). The GaAs surface is rather smooth and flat containing several peaks and craters, which are most likely caused by the impact of high-energy particles or heavy clusters.

FIG. 11

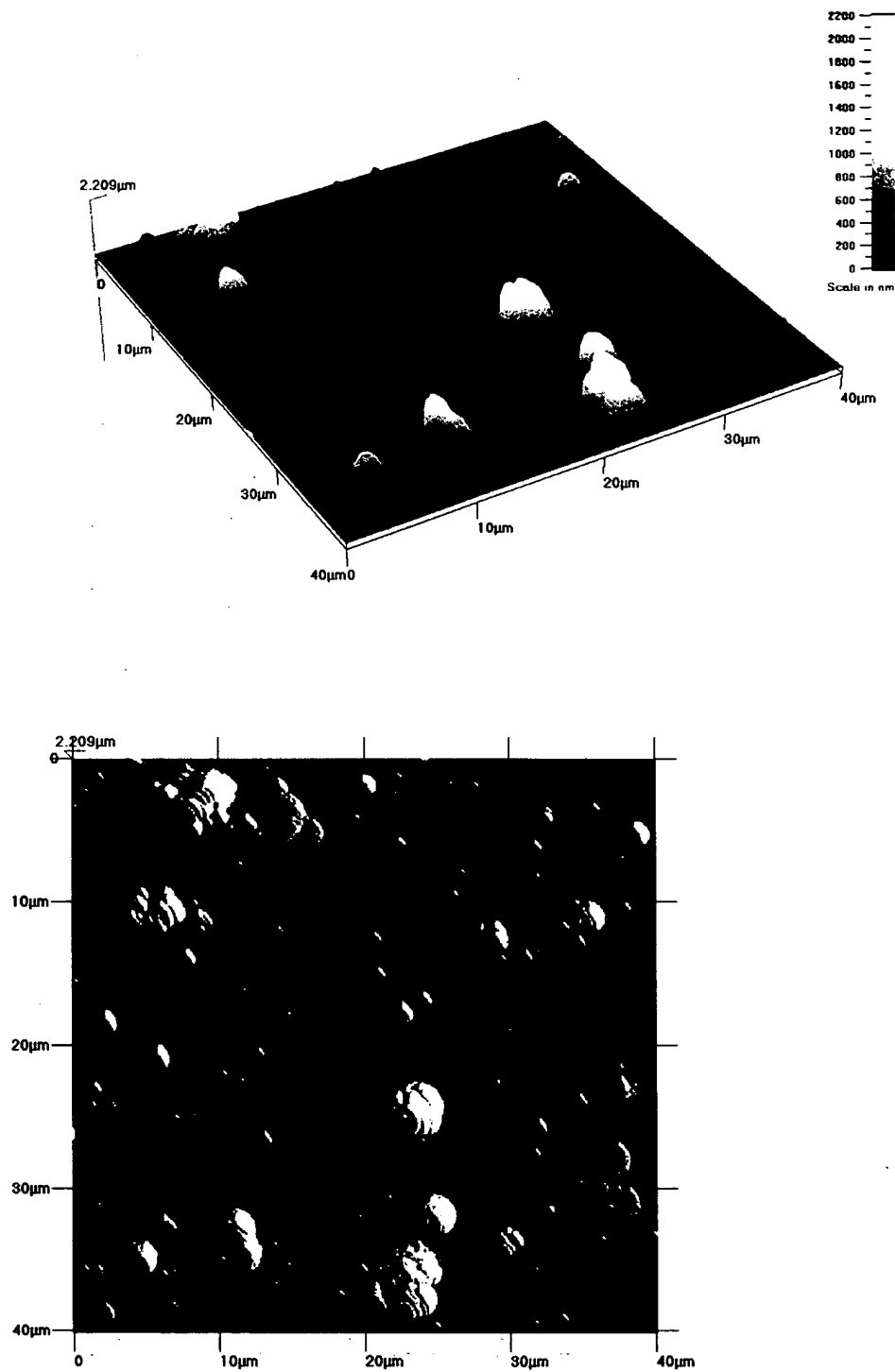


Figure 12: Three dimensional and top AFM image of the surface of the n-GaAs/p-Si sample (units in μm). The film is fairly smooth and looks similar to the surface image shown in Fig.11.

FIG. 12

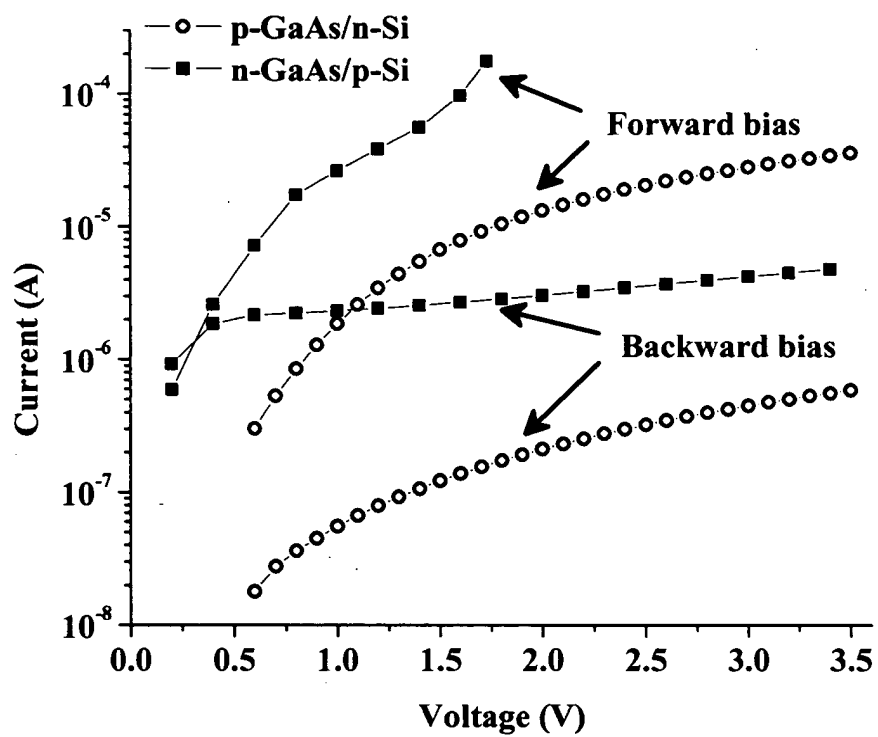


Figure 13: I/V characteristic of the p-GaAs/n-Si and n-GaAs/p-Si sample.

FIG. 13

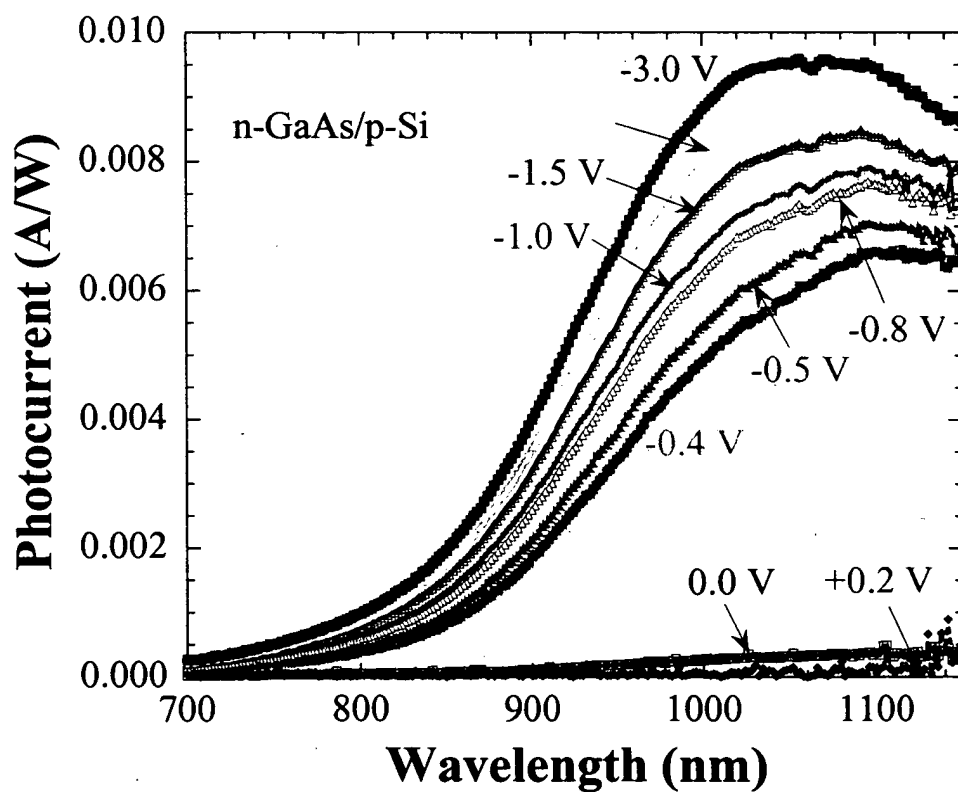
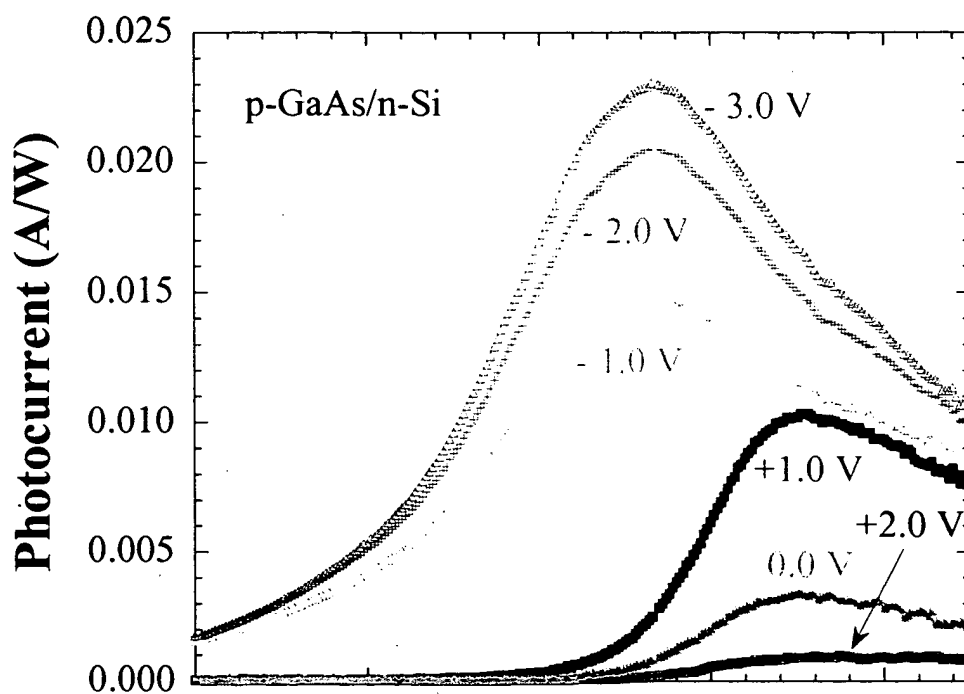


FIG. 14(a) and FIG. 14(b)

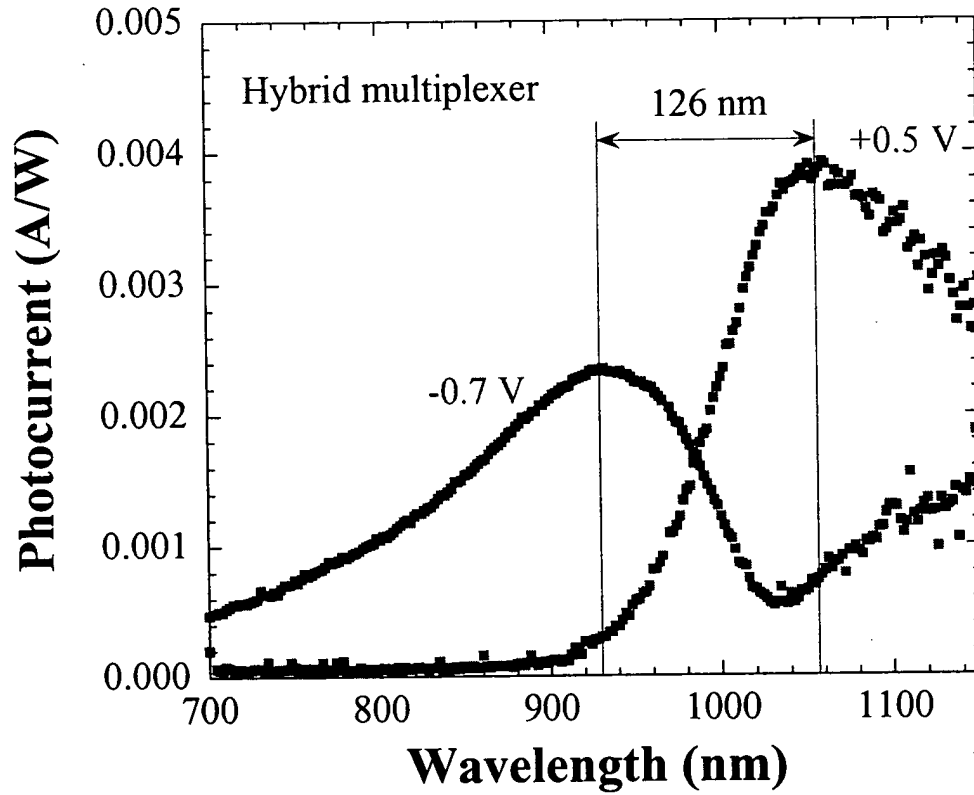
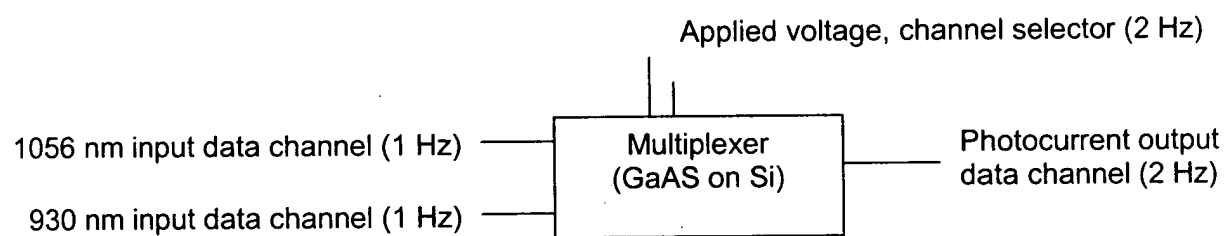


Figure 15: The realization of a hybrid multiplexer by switching the responsivity of the p-GaAs/n-Si hetero-junction between the Si substrate and the thin-film GaAs. The separation of the peaks is 126 nm.

FIG. 15

**FIG. 16**

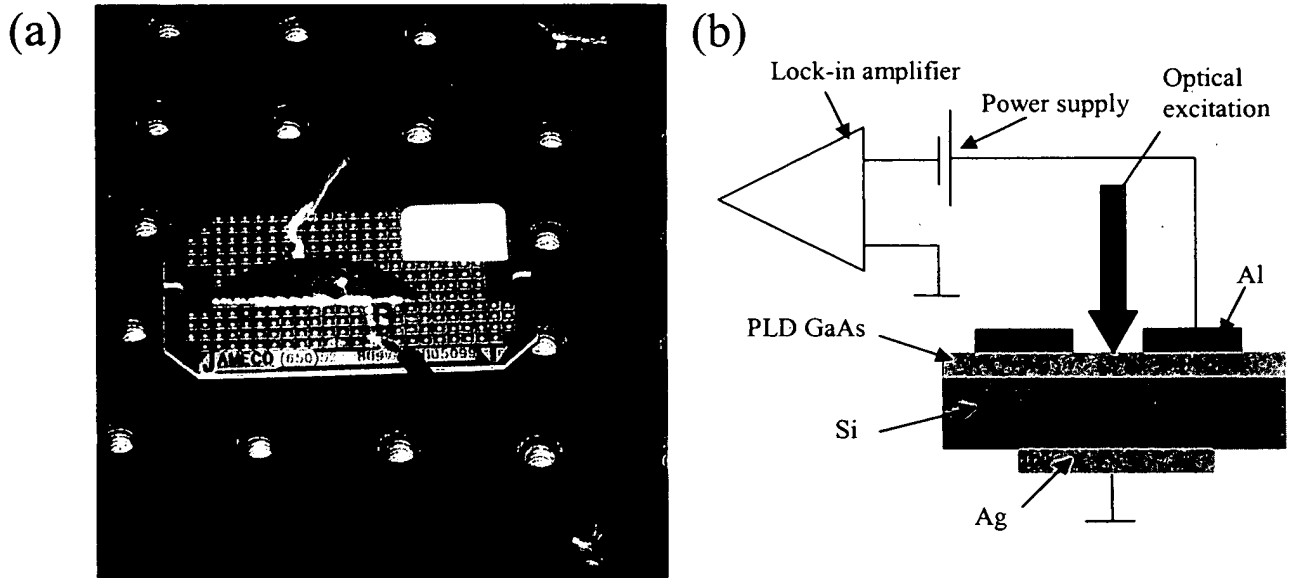
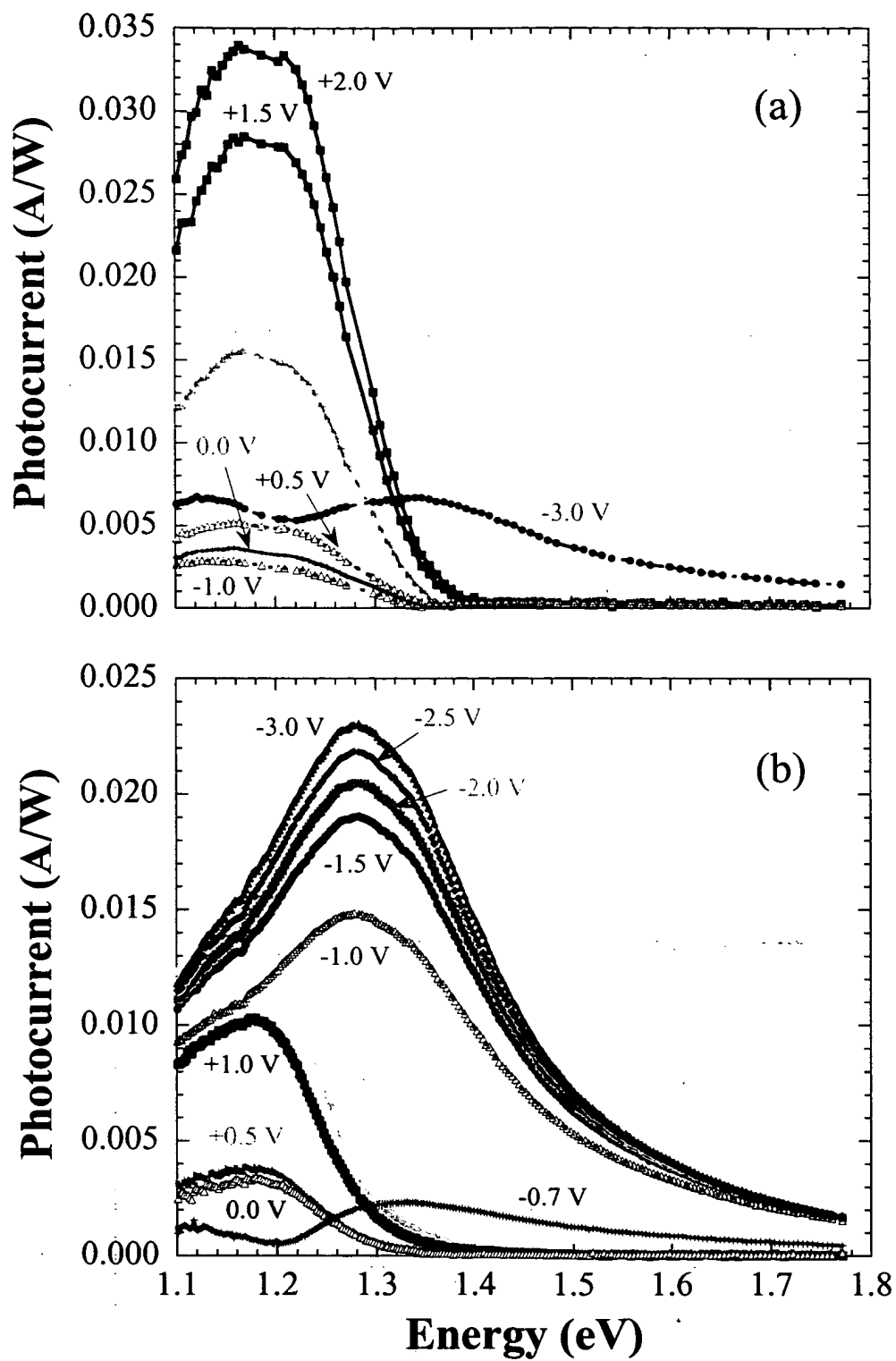


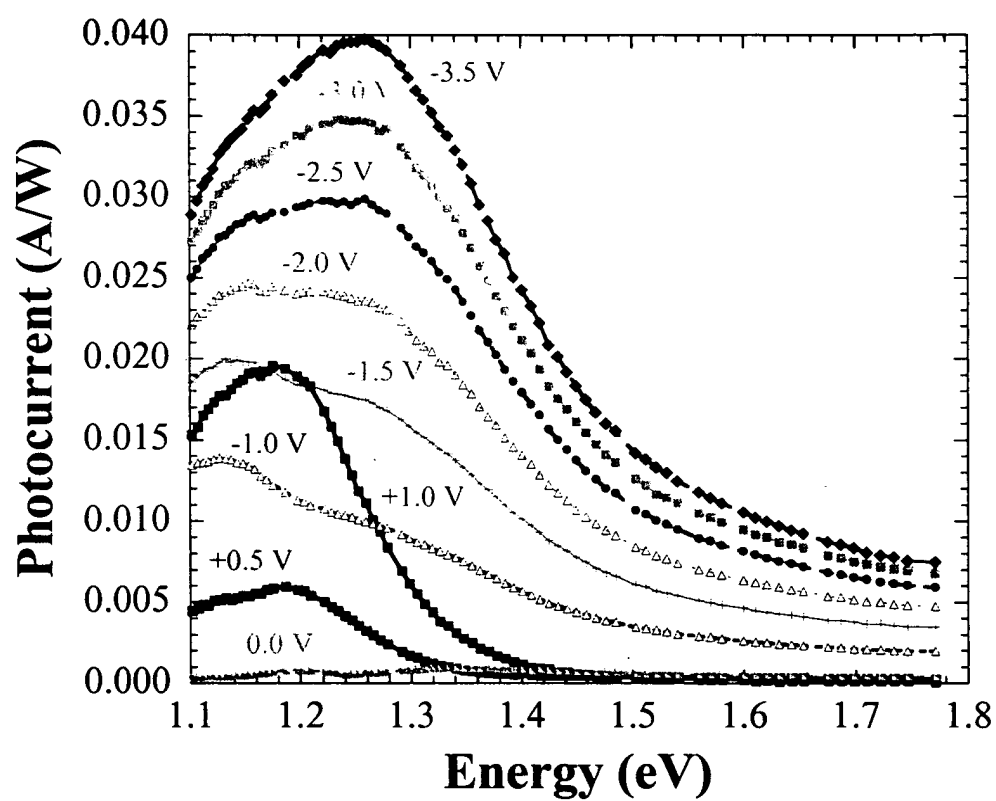
Figure 17: (a) Image of a p-GaAs/n-Si sample and (b) the schematic sketch of the circuit used to measure the PC.

FIG. 17



Figures 18(a) and 18(b): (a) PC of the sample formed at 355 nm and (b) PC of the sample formed at 532 nm for various forward (+) and reverse biases.

FIG. 18



PC of the sample formed at 1064 nm.

FIG 19

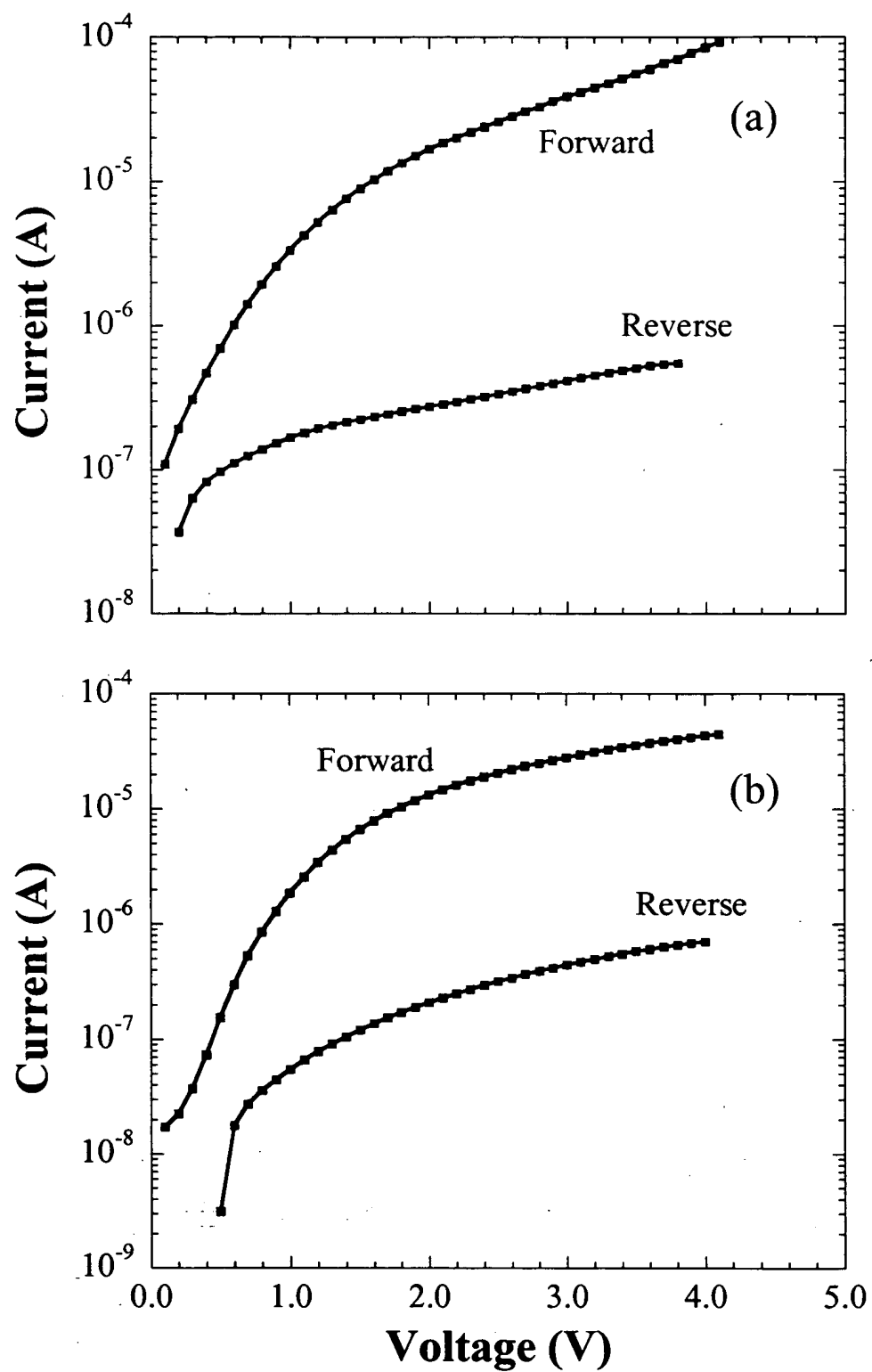


Figure 20(a) and 20(b): I/V characteristic in the dark of the sample formed (a) at 355 nm and (b) at 532 nm.

FIG. 20A and FIG. 20B

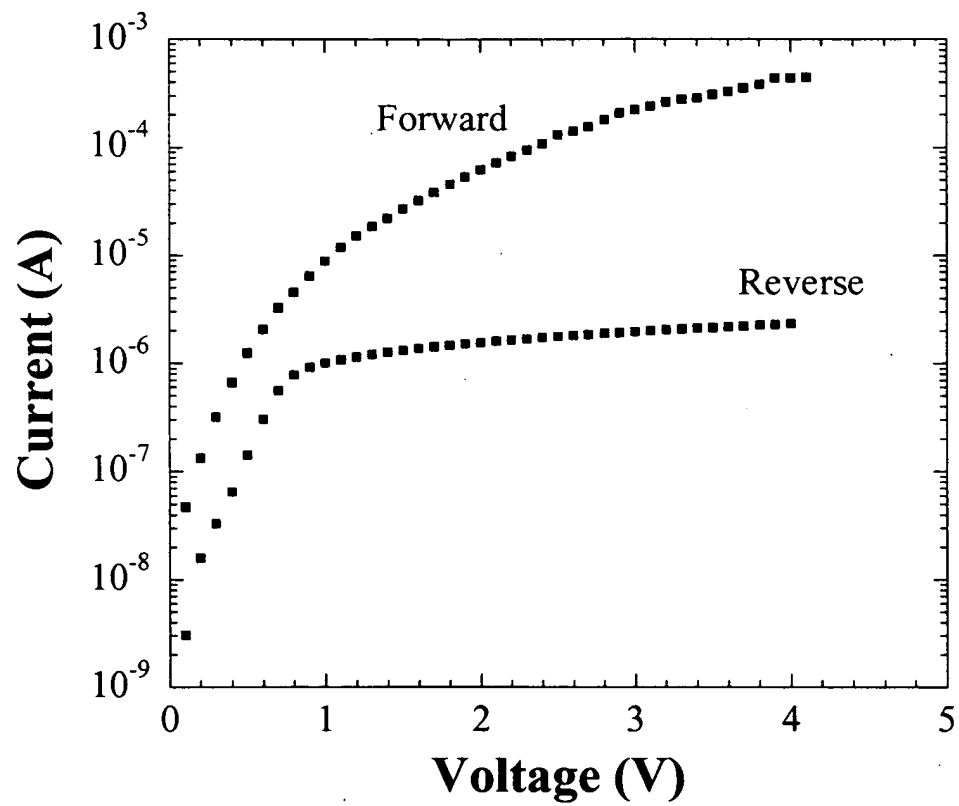
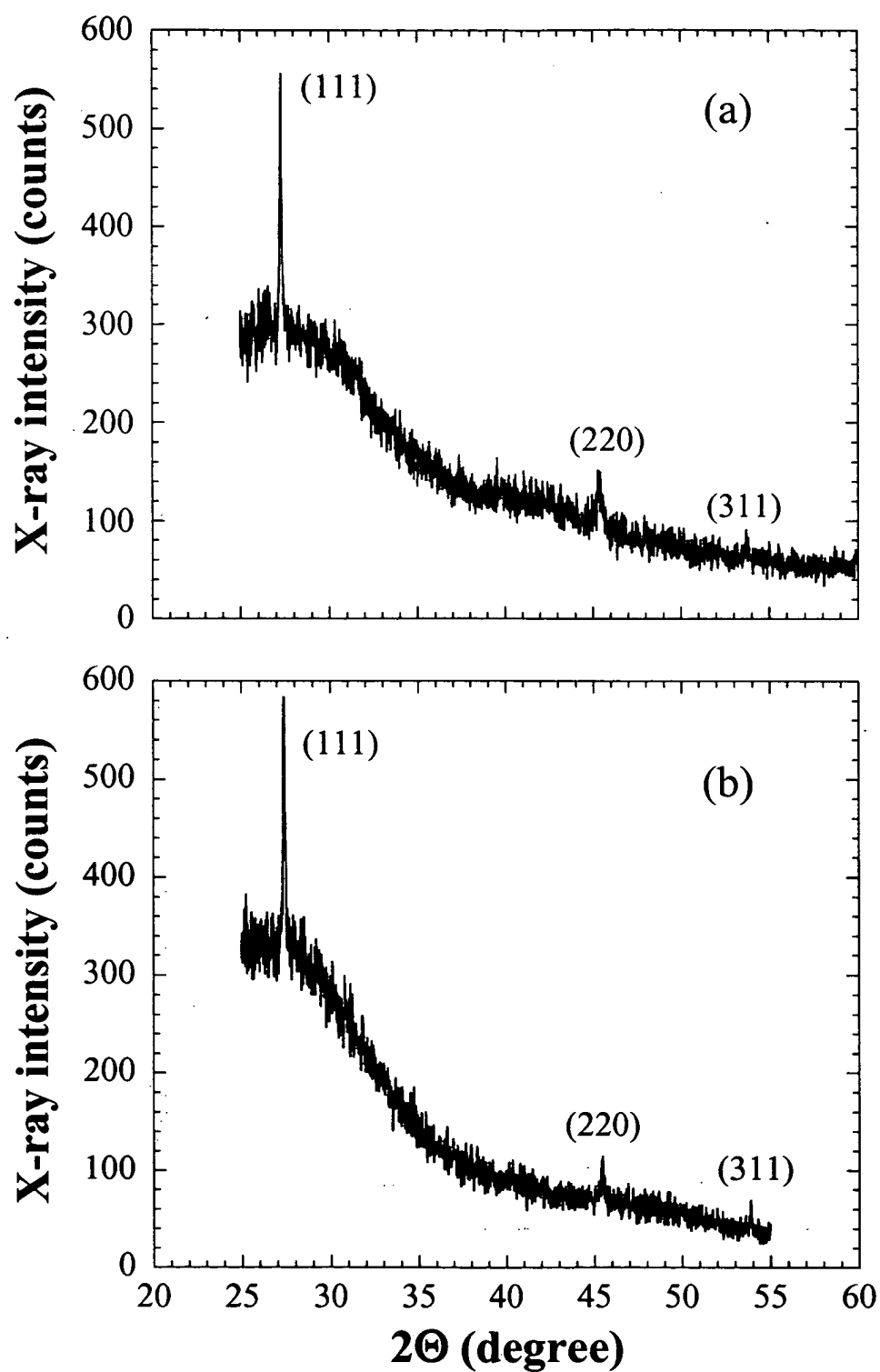


Figure 21: I/V characteristic in the dark of the sample formed at 1064 nm.

FIG. 21



Figures 22(a) and 22(b): X-ray patterns of the sample formed at (a) 355 nm and (b) 532 nm.

FIG. 22A and FIG. 22B

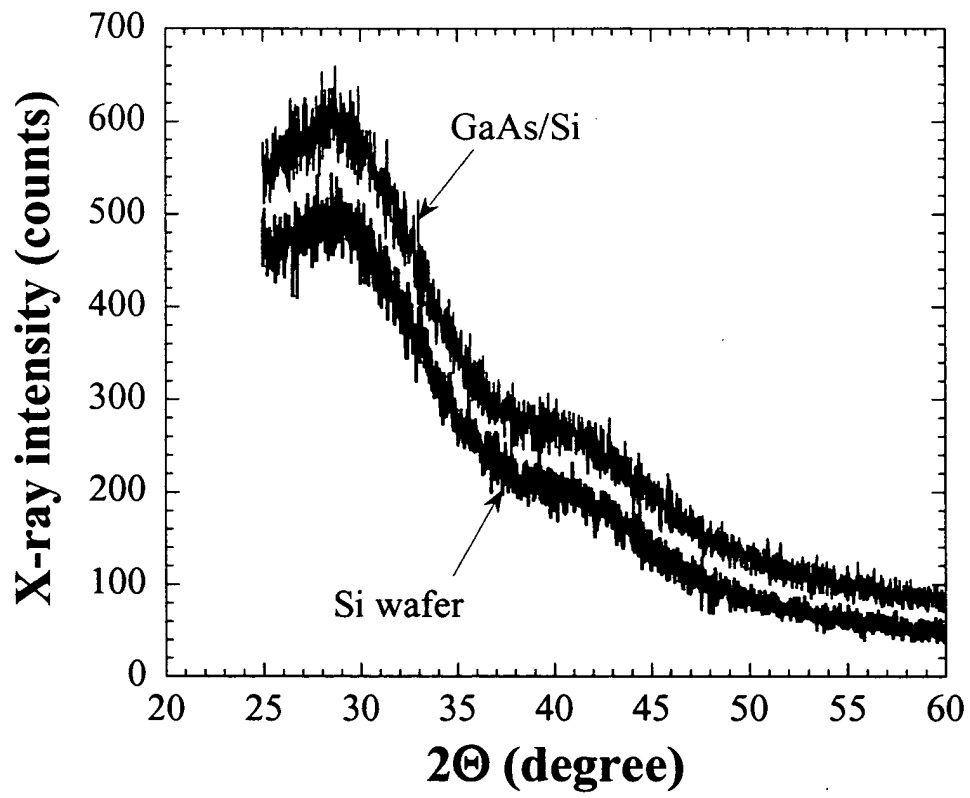


Figure 23: X-ray signal of the film formed at 1064 nm and of a Si substrate without film.

FIG. 23